DAC-FW
AF/1651 KC

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent application of:

Hans-Peter Call (applicant)	)	Examiner: Weber, John P
Serial No.: 09/446,373	)	
Filed June 19, 1998	)	Group Art Unit: 1651
For: OXIDATION AND BLEACHING SYSTEM WITH ENZYMATICALLY PRODUCED OXIDIZING AGENTS	)	

Übach-Palenberg, Germany , 27. 08. 2004 (as fax in advance: **Fax Nr.:** 001 703 308 6459
– 13 pages –

Assistant Commissioner for Patents
Washington, DC 20231

Ref.: RESPONSE TO THE DECISION ON PETITION FROM JUNE 28Th, 2004, PERSUANT TO 37 CFR 1.137 (b), TO REVIVE THE ABOVE IDENTIFIED APPLICATION

Dear Sir, Mr. Cliff Congo,
(Petitions Attorney, Office of Petitions)

you find enclosed the:

Appeal Brief
The respective Petition for Extension of Time under CFR.1.136(a)
Credit card payment form: US $ 220 → is already paid
including the respective amendments according to the examiner's requirements
(the originals in triplets will be sent by separate regular mail

Respectfully,

H. P. Call

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Application No. 09/446,373

Fax: 001 703 308 6459

PTO/SB/22 (10-00)
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PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional)

In re Application of	Hans-Peter Call
Application Number	09/446,373
Filed	19.6.98
For	Oxid. and Bleaching .. ?
Group Art Unit	1651
Examiner	J.P Weber Ph.D.

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

- [X] One month (37 CFR 1.17(a)(1)) $ 55.—
- [ ] Two months (37 CFR 1.17(a)(2)) $
- [ ] Three months (37 CFR 1.17(a)(3)) $
- [ ] Four months (37 CFR 1.17(a)(4)) $
- [ ] Five months (37 CFR 1.17(a)(5)) $

- [ ] Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: $
- [ ] A check in the amount of the fee is enclosed.
- [X] Payment by credit card. Form PTO-2038 is attached.
- [ ] The Commissioner has already been authorized to charge fees in this application to a Deposit Account.
- [ ] The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____. I have enclosed a duplicate copy of this sheet.

I am the
- [X] applicant/inventor
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
- [ ] attorney or agent of record.
- [ ] attorney or agent under 37 CFR 1.34(a). Registration number if acting under 37 CFR 1.34(a)_____.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

27.9.2004
Date

H.P.Call
Signature

Dr. Hans-Peter Call
Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

- [ ] Total of _____ forms are submitted.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent application of:

Hans-Peter Call (applicant)	)	Examiner: Weber, John P
Serial No.: 09/446,373	)	
Filed June 19, 1998	)	Group Art Unit: 1651
For: OXIDATION AND BLEACHING SYSTEM WITH ENZYMATICALLY PRODUCED OXIDIZING AGENTS	)	

Übach-Palenberg, Germany, Sept. 27, 2004

Assistant Commissioner for Patents
Washington, DC 20231

Amendment after allowance according to 37 CFR 1.312

Sir:

In response to the Examiner's Amendment, dated May 2, 2003, please amend the above-identified application as follows:

In the claims:

The formal corrections etc. are fulfilled according to your proposals and are respectfully submitted and attached (claim 101 to 138).

Patent claims

101.(currently amended) Enzyme component system (ECS) as a combined oxidation and bleaching system for the preparation of special highly selective oxidants, consisting of

system component 1): at least one hydrolase selected from the group consisting of the enzyme classes: 3.1, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.7 or at least one hydrolase selected from the group consisting of the enzyme classes: 3.5, 3.5.1, 3.5.2, 3.5.3, 3.5.4, 3.5.5 or 3.5.99,

system component 2): at least one compound selected from the group of fatty acids consisting of C_6 to C_{26}, saturated, monounsaturated or polyunsaturated, fatty acids,

system component 3): at least one oxidant for reaction with the enzymes,

system component 4): at least one compound selected from the group of carbonyl compounds.

102.(currently amended) Enzyme component system according to claim 101,wherein enzymes of class 3.1.1.3 lipases (triacylglycerol lipase, triglyceroacyl hydrolases) are used as system component 1.

103.(currently amended) Enzyme component system according to claim 101, wherein enzymes of class 3.5.1.4 amidases, or class 3.5.5.1, nitrilases, are used as system component 1.

104. (currently amended) Enzyme component system according to claim 101, wherein enzymes of class 3.1.1.3 (lipases) are obtained from the group of organisms, consisting of *Candida antarctica, Candida rugosa, Candida lipolytica, Candida cylindraceae, Candida spec., Geotrichum candidum, Humicula lanuginosa, Penicillium cambertii, Penicillium roqufortii, Aspergillus spec., Mucor javanicus, Mucor mehei, Rhizopus arrhizus, Rhizopus niveus, Rhizopus delamar, Rhizopus spec., Chromobacterium viscosum, Pseudomonas cepacia, Pseudomonas spec.*, wheat seedlings and pancreas.

105. (currently amended) Enzyme component system according to claim 101, wherein it contains enzymes from fungi, bacteria, animals or plants obtained from natural organisms or organisms modified by genetic engineering, prostetic groups of enzymes or part of enzymes (containing the active centre) modified by specific enzymatic or chemical treatments.

106. (currently amended) Enzyme component system according to claims 101 and 105, wherein the enzymes of classes 3.5.1.4 and 3.5.5.1 are obtained from the group of micro-organisms consisting of *Pseudomonas aeruginosa, Pseudomonas putida, Pseudomonas acidovorus, Pseudomonas spec., Aspergillus nidulans, Aspergillus spec., Brevibacterium spec., Streptococcus pneumoniae and Rhoducoccus spec.*.

107. (cancelled) Enzyme component system according to claims 101 and 105, wherein as modified enzymes or part of enzymes prosthetic groups or mimicking substances mimicking the active centre of the respective enzyme are used as enzymatic catalysts.

108.(currently amended) Enzyme component system according to claim 101, wherein it contains as system component 2) one or more compounds selected from the group of saturated, monounsaturated or polyunsaturated fatty acids consisting of C_6 to C_{26} fatty acids according to Appendix 1.

109. (currently amended) Enzyme component system according to claim 108, wherein it contains as system component 2) tetradecanoic acid (myristic acid) or dodecanoic acid (lauric acid).

110. (currently amended) Enzyme component system according to claim 101, wherein it contains as system component 3) at least one oxidant selected from hydogen peroxides (H_2O_2), a compound selected from the group of organic peroxides consisting of Mg-monoperoxy-phthalate, ditert.butyl peroxide, cumene hydroperoxide, lauroyl peroxide, 3-chloroperoxy-benzoic acid, dicumyl hydroperoxide, methyl ethyl ketone peroxide, benzoyl peroxide, diperoxydodecanedioic acid Na salt and compounds selected from the group of per-compounds consisting of perborate, persulfate, percarbonate, perphosphate, percarbamide, perchlorate.

111. (cancelled) Enzyme component system according to claim 101 and 110, wherein it contains H_2O_2, as system component 3).

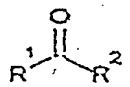
112. (currently amended, previously claim 111) Enzyme component system according to claim 101 and 110, wherein it contains as system component 3) H_2O_2-activating ions selected from the group of transition metals consisting of Mo^{6+}, W^{6+}, Va^{5+} or compounds selected from the group cyano-compounds consisting of nitrilamines or dicyandiamines.

113. (cancelled) Enzyme component system according to claim 101 and 110, wherein it contains as system component 3) H_2O_2 generated in situ from glucose and GOD and O_2.

114. (cancelled) Enzyme component system according to claim 101 and 110, wherein it contains as system component 3) besides per-compounds also a bleaching activator: TAED (tetraacetylethylenediamine), TAGU (tetraacetylglycoluril) and iso-NOBS (sodium p-- Isononanoyloxy- benzenesulfonate).

115. (currently amended) Enzyme component system according to claims 101 and 110 wherein it contains as system component 3) besides the peroxides or per-compounds also air or oxygen wherein air and (O_2) oxygen can be used at atmospheric pressure or at a slightly positive pressure of up to 2 bar.

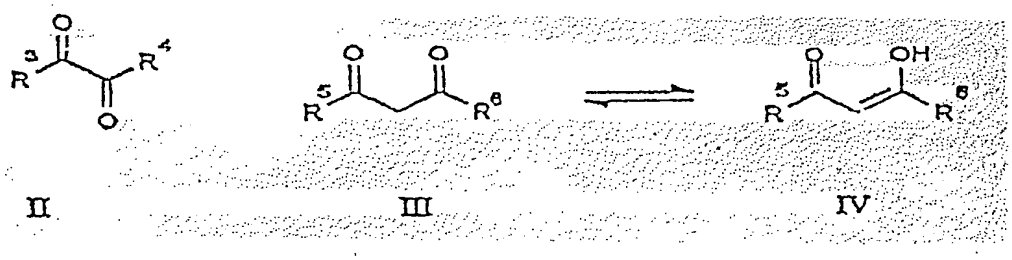
116. (currently amended) Enzyme component system according to claim 101, wherein it contains as system component 4) at least one ketone of general formula I, wherein



I

the R^1 and R^2 groups can be equal or different and denote aliphatic or aromatic groups, or, the R^1 and R^2 groups can form a ring containing besides carbon also heteroatoms selected from nitrogen, oxygen and sulfur.

117. (currently amended) Enzyme component system according to claim 101, wherein it contains as system component 4) a 1,2-diketone of formula II, a 1,3-diketone of formula III or a polyketone (polyketide) as well as a tautomeric enol of formula IV,



II III IV

wherein the R^3 to R^6 groups (,once again,) can be equal or different and denote aliphatic or aromatic groups, or, groups R^3 and R^4 and groups R^5 and R^6, together, can form a ring containing besides carbon also heteroatoms selected from nitrogen, oxygen or sulfur.

118. (currently amended) Enzyme component system according to claim 101, wherein it contains as system component 4) carbonyl compounds selected from the group consisting of hydroxyketones, 1,3-unsaturated ketones, oxydicarboxylic acid, quinones and halogenated ketones.

119. (currently amended) Enzyme component system according to claim 101, wherein it contains as system component 4) a compound selected from the group of those listed in Appendix 2.

120. (cancelled) Enzyme component system according to claim 101, wherein it contains additionally a polymerization catalyst: a phenolic substance or polycyclic compound with several oxidizable hydroxyl groups according to Appendix 3.

121. (cancelled) Enzyme component system according to claims 101, wherein it contains add to it as an additionally an enzymatic oxidation system with enzyme action- enhancing compounds, said system containing consists of:
a) at least one suitable oxidation catalyst
b) at least one suitable oxidant
c) at least one mediator selected from the group of N-hydroxy compounds consisting of hydroxylamines, hydroxylamine derivatives, hydroxamic acids, hydroxamic acid derivatives, aliphatic, cycloaliphatic, heterocyclic or aromatic compounds containing at least one N-hydroxy, oxime, N-oxy or N,N'-dioxy function or at last one mediator from the group of amides consisting of hydrazides or 1,2,4-triazolidin- 3,5-diones (urazoles) or at least one mediator from the group of imides consisting of hydantoins, or at least one mediator from the group of oxocarbons.

122. (cancelled) Enzyme component system according to claim 101, wherein it contains add to it as an additionally an enzymatic oxidation system with enzyme action- enhancing compounds, said system containing:
at least one mediation enhancer selected from the group consisting of carbonyl compounds, aliphatic ethers, phenol ethers or olefins (alkenes) or at least one mediation enhancer selected from the group consisting of NO-, NOH- and HRN-OH compounds or amides consisting of hydrazides or urazoles or imides consisting of hydantoins or oxocarbons.

123. (cancelled) Enzyme component system according to claim 101, wherein it contains add to it as an additionally enzymatic oxidation system with enzyme action-enhancing compounds, said system containing:
at least one mediation enhancer selected from the group consisting of cation radical-generating substances, of the phenothiazine or phenoxazine type or of the (R=N-N=R) type (ABTS) or from the group of aryl-substituted alcohols (nonphenols) consisting of veratryl alcohol or from the group of phenol derivatives consisting of p-hydroxycinnamic acid, 2,4-dichlorophenol, p-hydroxy- benzenesulfonate, vanillin (4-hydroxy-3-methoxybenzaldehyde), p-hydroxybenzoic acid, 5-amino-2- hydroxybenzoic acid (5-aminosalicylic acid) or Wurster-type radical cation compounds consisting of p- phenylenediamine, N,N-dimethyl-p-phenylenediamine, N,N-diethyl-p-phenylenediamine, N,N,N',N'-tetramethyl-p-phenylenediamine, 2,3,5,6-tetramethyl-p-phenylenediamine or from the group of radical anions consisting of semiquinones, which can be generated by enzymatic oxidation of hydroquinones.

124. (cancelled) Enzyme component system according to claim 101, wherein it contains add to it as additional enzymatic oxidation catalyst enzymes selected from the group of oxidoreductases consisting of classes 1.1.1. to 1. 97 :
cellobiose: oxygen-l-oxidoreductase (cellobiose oxidase) (1.1.3.25),
cellobiose: quinone-l-oxidoreductase (1.1.5.1), bilirubin oxidase (1.3.3.5), cytochrome oxidase (1.9.3), oxygenases, lipoxygenases (1.13, 1.14), superoxide dismutase (1.15.11), ferrioxidase consisting of ceruloplasmin (1.16.3.1); enzymes selected from the group 1.10 consisting of catechol oxidase (tyrosinase) (1.10.3.1), L-ascorbate oxidase (1.10.3.3), O-aminophenol oxidase (1.10.3.4) and laccase (benzodiol:oxygen oxidoreductase) (1.10.3.2); enzymes selected from the group 1.11 consisting of cytochrome C peroxidase (1.11.1.5), catalase (1.11.1.6), peroxidase (1.11.1.7), iodide peroxidase (1.11.1.8), glutathione peroxidase (1.11.1.9), chloride peroxidase (1.11.1.10) and L- ascorbate peroxidase (1. 11. 1. 11), phospholipid hydroperoxide glutathione peroxidase (1. 11. 1. 12), manganese peroxidase (1.11.1.13) and diarylpropane peroxidase (ligninase, lignin peroxidase) (1.11.1.14).

125. (cancelled) Enzyme component system according to claims 101 and 124, wherein enzymes selected from the group of oxidoreductases consisting of laccases or peroxidases or both are used as oxidation catalysts.

126. (cancelled) Enzyme component system according. to claim 124 and 125, wherein it contains laccases or peroxidases or both selected from the group of white rotting fungi consisting of *Trametes versicolor, Trametes spec., Phlebia spec., Pleurotus spec., Phanerochaete chryosporium, Agaricus spec.* and also other fungi, bacteria, plant and animal cells obtained from natural organisms or organisms modified by genetic engineering.

127. (cancelled) Enzyme component system according to claim 101, 124 to 126, wherein it contains modified enzymes (enzyme constituents) prosthetic groups or mimicking substances are used as the enzymatic catalysts.

128. (currently amended and changed) Enzyme component system according to claim 101 and 110 wherein it employs as additional oxidants air, oxygen, ozone, a compound selected from the group of peracids consisting of peracetic, performic, persulfuric, pernitric, metachloroperoxybenzoic and perchloric-acid or oxygen species and the radicals thereof consisting of the OH, OOH and OH^+ radicals, superoxide (O_2^-), dioxygenyl cation (O_2^+), singlet oxygen, ozonide (O_3^-), dioxiranes, dioxitanes or Fremy radicals.

129. (cancelled) Enzyme component system according to claim 101 and 121, wherein additionally mediators and mediatior enhancers are used and that these compounds are such those are shown in Appendix IV and IVa.

130. (cancelled) Enzyme component system according to claims 101, 121 and 129, wherein the additional mediator/mediator enhancer ratio is from 5000:1 to 5:1.

131. (replaced and changed) A process for the delignification, modification, bleaching of cellulose or wood pulps from wood or annual plants, high yield wood pulps from groundwood and refiner pulp or deinked pulps comprising treatment of the cellulose or pulps with the enzyme component system of claim 101.

132. (replaced and changed) The method of claim 131, wherein the treatment with the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to

95 °C, at a pulp consistency from 0.5 to 40%, in the presence of oxygen or air at atmospheric pressure or at a slightly positive pressure (up to 2 bar); wherein system component 1 is lipase from *Humicula lanuginose* at a concentration from 0.05 to 5 mg and amidase from *Pseudomonas aeruginosa* at a concentration from 40 to 200 IU; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 20 mg; system component 3, peroxides at a concentration from 0.05 to 20 mg (100%); system component 4, ketone at a concentration from 0.05 to 20 mg, each case based on 1 g of absolutely dry pulp.

133. (replaced and changed) The method of claim 131, whereby an acid wash or a Q-step (chelating step) is used before or after the treatment with the enzyme component system and the acid wash is carried out at 60-120 °C, at pH 2 to 5:5, for 30-90 min and at 4%-20% pulp consistency, and the Q-step is carried out with 0.05% -1 % of chelator compound at 60°-100°C, at pH 2 to 5.5 for 30-90 min and at a pulp consistency of 4%-20%.

134. (replaced and changed) The method of claim 133, whereby the acid wash or the Q-step are carried out for 1 hour at 60°-90°C, at pH 2 to 5 and at 10% pulp consistency.

135. (replaced and changed) The method of claim 131, whereby said system can be used before or after any possible treatment of the pulp by single or multiple digestion, bleaching steps or other pre- and post-treatments: (such as) alkaline bleaching, alkaline extraction, washing, acid treatment, Q-step, O_2-delignification step, peroxide bleaching step, O_2-promoted peroxide step, pressurized peroxide step, peracid step, peracid- promoted O_2 or peroxide step, ozone bleaching step, dioxirane step, polyoxymetalate step, Cl_2-delignification step, ClO_2- bleaching step, Cl_2 /ClO_2- bleaching step, reductive bleaching steps, sulfonation steps, NO/NO_2 treatments, nitrosylsulfuric acid treatment, swelling steps, enzyme treatments selected from the group of hydrolases consisting of cellulases, xylanases, mannases, pectinases, proteinases, lipases, amidases, or selected from the group of oxidoreductases consisting of laccases, peroxidases , or several combined treatments.

136. (currently amended) The method of claim 131, whereby a swelling step is carried out with the aid of substances selected from the group of glycols consisting of propylene glycol, ethylene glycol, ethylene glycol dimethyl ether solvents; alcohols consisting of methanol, ethanol, butanol, amyl alcohol, cyclohexanol, benzyl alcohol and chlorohydrin; phenols consisting of methylphenols and methoxyphenols; aldehydes consisting of formaldehyde and chloral; mercaptans consisting of butyl mercaptan, benzyl mercaptan and thioglycolic acid; organic acids consisting of formic acid, acetic acid and chloroacetic acid; amines consisting of ammonia and hydrazine; hydrotropic solvents consisting of concentrated solutions of sodium benzoate; other basic solvents consisting of OH-/H_2O or OH-/alcohol and benzenes, pyridines, dioxane and ethyl acetate.

137. (replaced and changed) The method of claim 131, whereby (there is additionally added to the reaction solution) a complexing agent selecting from ethylenediaminetetraacetic acid (EDTA), diethylenetriaminepentaacetic acid (DTPA), hydroxy-ethylenediaminotriacetic acid (HEDTA), diethylenetriaminopenta-methylenephosphonic acid (DTMPA), nitrilotriacetic acid (NTA), polyphosphoric acid (PPA) or other complexing agents for iron, manganese or copper: diethylamine or hydroxylamine is added.

138. (replaced and changed) The method of claim 131, said process being carried out in several treatment steps and whereby between each step a washing or washing and extraction step with alkaline hydroxide solution is applied, or neither washing nor extraction takes place.

REMARKS

Applicant has changed claims 101 to 138 according to the requirement of the examiner without prejudice or disclaimer. No new matter has been added. In view of the foregoing, it is respectfully urged that the present claims be allowed. The version is formally corrected according to the examiner's requirements.

For the following patent claims (claim 139 to 150) finally withdrawn from further consideration pursuant to 37 CFR 1.142 (b) the Commissioner is respectfully urged -in view of the foregoing- (according to 37 CFR 1.144) for a:
PETITION FROM REQUIREMENT FOR RESTRICTION
As a precaution the same PETITION FROM REQUIREMENT FOR RESTRICTION is also respectfully urged for the cancelled claims (Examiner's Amendment, Office Action from 25th October 2002) as claim 107, 111, 113, 114, 120-127, 129-138.

The arguments are as follows:

1) The general inventive concept -as several times pointed out - is the generation of active oxygen species e.g. dioxiranes., i.e. the invention claims an innovative oxidation system which can be used for many applications including the mentioned procedures in the presented patent application.
This generation takes place by the reaction of a lipase, fatty acids and peroxide → formation of perfatty acids.
In the presence of an appropriate ketone the formation of the mentioned dioxiranes can occur.

Additionally an other important aspect of the general inventive concept is:

2) The claimed treatment applications have more or less the same basic material as "system substrate" which is oxidized by the claimed oxidation method.
This is the case for the treatment of **ligno-cellulose containing material** such as the treatment of pulp (delignification/bleaching), waste water treatments of pulp and paper waste water, production of particle boards, fibre boards etc., deinking of waste paper, textile treatment (with exception of wool).
For the detergent application, chemical oxidation, treatment of general waste water and wool treatments the inventive concept is like 1) → claimed products which are oxidized by the claimed oxidation method.

Patent claims

139. (currently amended) A process for the treatment of paper production waste water (grinder wastewater, TMP wastewater) and of waste water from other branches of the industry, such as wood pulp waste water and textile production waste water and other waste water, comprising treatment of these waste waters with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at pH 2 to 11,

at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), wherein system component 1 is lipase from *Aspergillus spec.* at a concentration from 0.05 to 50 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 200 mg; system component 3, peroxides at a concentration from 0.05 to 200 mg (100%); system component 4, ketone at a concentration from 0.05 to 200 mg, and that a polymerization catalyst, is used at a concentration from 0.005 to 200 mg, the concentrations in all cases being based on 1 litre of waste water.

140. (currently amended) A process for the production of lignin solutions or gels and of the corresponding binders/adhesives, and for the production of wood-based composites, comprising production of these compounds with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at pH 2 to 11, at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), wherein system component 1 is lipase from *Humicola lanuginosa* at a concentration from 0.05 to 50 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 200 mg; system component 3, peroxides at a concentration from 0.05 to 200 mg (100%); system component 4, ketone at a concentration from 0.05 to 200 mg, and that a polymerization catalyst, is used at a concentration from 0.005 to 200 mg, the concentrations in all cases being based on 1 litre of waste water.

141. (currently amended) A process for the enzymatic printing ink removal during the deinking of waste paper, comprising treatment with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at pH 7 to 11, at a temperature from 20° to 95 °C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), wherein system component 1 is lipase from *Humicola lanuginosa*, at a concentration from 5 to 500 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 5 to 2000 mg; system component 3, peroxides at a concentration from 5 to 5000 mg (100%); system component 4, ketone at a concentration from 5 to 2000 mg, and that, to change the optimum pH for the printing ink removal reaction and to affect the swelling behavior of the waste paper, a phenolic or polycyclic substance with several oxidizable hydroxyl groups, is used at a concentration from 1 to 2000 mg, in each case based on 1 kg of air-dried waste paper.

142. (currently amended) The method of claim 141, whereby a reducing agent such as sodium bisulfate, sodium dithionite, ascorbic acid, a thiol compound, mercapto compound or glutathione, is added at a concentration from 0.1 to 1000 mg per kg of air-dried waste paper.

143. (currently amended) The method of claim 141, whereby, to collect the printing ink particles and to produce foam during flotation, a commercial collector, is used at a concentration from 1 to 5000 mg per kg of air-dried waste paper.

144. (currently amended) The method of claim 141, whereby additional enzymes selected from the group of hydrolases consisting of cellulases, xylanases, mannases, pectinases and from the group of oxidoreductases are added.

145. (currently amended)) A process as an enzymatic oxidation system in organic synthesis, comprising <u>oxidative</u> treatment with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at pH 2 to 11, at a temperature

from 20° to 95 °C, in the presence of oxygen or air at atmospheric pressure or slightly positive O_2 pressure (up to 2 bar), wherein system component 1is lipase from *Humicola lanuginosa* at a concentration from 0.05 to 5 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 100 mg; system component 3, peroxides at a concentration from 0.05 to 100 mg (100%); system component 4, ketone at a concentration from 0.05 to 100 mg, the concentrations in all cases being based on 10 mmoles of substrate.

146. (currently amended) The method of claim 145, whereby an aromatic alcohol or an aromatic methyl compound is used as the substrate for the oxidation reaction according to the invention.

147. (currently amended) A process for the enzymatic liquefaction of coal, comprising treatment with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to 95°C, at a coal slurry consistency from 0.5 to 40%, in the presence of oxygen or air at atmospheric pressure or a slightly positive O_2 pressure (up to 2 bar), wherein system component 1 is lipase from *Humicula lanuginosa* at a concentration from 0.05 to 20 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 100 mg; system component 3, peroxides is at a concentration from 0.05 to 50 mg (100%); system component 4, ketone at a concentration from 0.05 to 100 mg, in each case based on 1 g of coal (lignite).

148. (currently amended) A process for the enzymatic detergent bleaching, comprising treatment with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 12, at a temperature from 20° to 95°C, in the presence of oxygen or air at atmospheric pressure or at a slightly positive O_2 pressure (up to 2 bar), wherein system component 1is lipase from *Humicula lanuginose* at a concentration from 0.05 to 20 mg; system component 2, one or more fatty acids, C_6 toC_{26}, at a concentration from 0.05 to 50 mg; system component 3, peroxides at a concentration from 0.05 to 50 mg (100%); system component 4, ketone, at a concentration from 0.05 to 50 mg, in each case based on 100 ml of washing solution.

149. (currently amended) The method of claim 148, whereby the system is added to a detergent formulation with all its technically common and known detergent substances or detergent additives.

150. (currently amended) A process for the enzymatic bleaching and/or decolorizing textile fabrics including wool, comprising treatment with the enzyme component system of claim 101, whereby the reaction of the enzyme component system is carried out at a pH from 2 to 11, at a temperature from 20° to 95°C, at a fabric density from 0.5 to 40% , in the presence of oxygen or air at atmospheric pressure or at a slightly positive O_2 pressure (up to 2 bar), wherein system component 1is lipase from *Humicula lanuginosa* at a concentration from 0.05 to 10 mg; system component 2, one or more fatty acids, C_6 to C_{26}, at a concentration from 0.05 to 20 mg; system component 3, peroxides at a concentration from 0.05 to 20 mg (100%); system component 4, ketone at a concentration from 0.05 to 20 mg, in each case based on 1 g of denim.

Respectfully,

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